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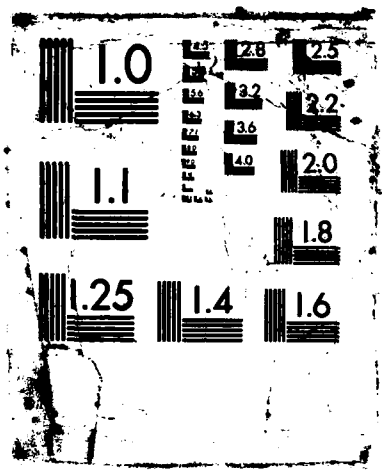
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Fraunhofer-Institut für Kurzzeitdynamik
Ernst-Mach-Institut
Abteilung für Ballistik

INVESTIGATION OF HIGHLY PRESSURIZED TWO-PHASE, REACTING FLOW

G. Klingenberg
(Principal Investigator)

CONTRACTOR:

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CONTRACT No. DAJA 45-88-C-0004

First Interim Report

1 January 1988 - 19 February 1988

The research reported in this document has been made possible through the support and sponsorship of the U. S. Government through its U. S. Army Research, Development and Standardization Group - UK. This report is intended only for the internal management use of the Contractor and the U. S. Government.

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A. Objectives

The First Interim Report informs on the current work done under the Contract No. DAJA 45-88-C-0004, entitled: "Investigation on Highly Pressurized Two-Phase, Reacting Flow".

The scope of this study is to investigate reacting flows under real ballistic conditions by extending the $H_2^{\Gamma}/O_2^{\Gamma}$/He mixture charges to include CO combustion. A new gun chamber will be designed and built with multiple measuring ports.

The research task during the first year is:

- To extend the $H_2^{\Gamma}/O_2^{\Gamma}$/He mixture charges including CO and establishing suitable operating ranges for the experiments below;
- In parallel to design and build an improved gas gun chamber with multiple diagnostic ports;
- To begin studies of H_2^{Γ}/CO/O_2^{Γ}/He mixtures laden with inert particles of known composition and size.

B. Research Efforts Proposed for the First Six Weeks

During the first six weeks of this Contract it was intended to

- move the existing gas gun to a new laboratory building;
- install the feed lines and safety equipment;
- begin with the design of the new gas gun chamber.

C. Work Done During the First Reporting Period

The gas gun has been moved to the new laboratory building. The safety equipment has been ordered. Installation of the feed lines has been contracted to a company. The design of a new gas gun chamber is under way.

D. Brief Statement of Research Plans for 1988

Research plans for the next six months are to build and test a new gas gun chamber using H_2/O_2/He gas mixtures and to start with the inclusion of CO as a propellant component.

E./F. Visits, List of Papers, etc.

Due to the very short reporting period no visits have been made and no papers have been published yet.

G. Significant Administrative Actions

A full-time research assistant (PhD in Chemistry) will be employed by the Fraunhofer Society on March 1, 1988, for a period of three years. His salary is covered by this Contract.

H. Amounts of Funds and Property Acquired

Since we are awaiting the first partial payment, no unused funds remain on this Contract. Also, no property was acquired with contract funds during the reporting period.

Weil am Rhein, February 19, 1988 Guenter Klingenberg


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